

**486-GL  
GREEN/VESA  
Cache Main Board  
User's Manual  
(03)**



**486-GL**  
**GREEN / VESA MAINBOARD**

**486-GL User's Manual/Testing Report**



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**Acknowledgments**

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## OVERVIEW OF THE 486-GL

### Introduction

The 486-GL is built around the 486 Central Processing Unit (CPU) from Intel Corp. offering you the full power of 32-bit computing including multi-tasking capabilities while retaining downward compatibility with the 8086 (IBM XT), 80286 (IBM AT), 80386 CPU and 80486 CPU's. All software that can be used with the 486-GL. The 486-GL is a "True Green" function optional and AT compatible mainboard which includes three VESA VL-BUS interface card slots, allowing the use of high-performance VL-BUS add-on cards.

### Cache Memory

The 486 CPU has 8K Caches to provide enhanced performance. In addition, the 486-GL has an external cache memory configurable as 64K, 128K, 256K. This cache memory is controlled by the controller built into the OPTi chipset. Cache memory represents one of the latest advances in memory management implementations for personal computing, greatly enhancing the speed of the system. Cache memory provides a memory buffer of high speed SRAM in which the data you are working with are stored during operations. The CPU can access the data in the cache much faster than from the main memory and the result is a huge boost in performance.

### The OPTi Chipset

One of the main features of the 486-GL is its use of the OPTi chipset, which integrates several components into two specially designed ASIC's (Application Specific Integrated Circuits), increasing the overall reliability and stability of the system. The chipset consists of three chips: The 82C895, 82C602. To support this chipset, the AMI WinBIOS includes a SETUP program which will enable you to tailor certain features of the OPTi chipset precisely according to your requirements.

### Memory Configuration

The 486-GL has room for 128 megabytes (MB) of RAM (Random Access Memory) on board. The memory sub-system is configured as four SIMM (Single In-line Memory Module) sockets divided into four banks. 72 pins of 256K, 1M, 2M, 4M, 8M, 16M, 32M, SIMM's can be used with the possibility to mix different SIMM types in different banks.

**486-GL VESA MAIN BOARD SPECIFICATION:**

<b>Central processing unit:</b>	Intel486SX-25/33;486DX-33/40/50;486DX2-50/66;Intel SL enhance serial CPU; Intel DX4-75/100; P24T;P24D; CX486S/S2/DX/DX2(M6,M7).
<b>Main memory:</b>	On board MAX 128MB.
<b>On board memory model:</b>	2MB;4MB;8MB;12MB;16MB;20MB;24MB;28MB;32MB;34MB; 40MB;48MB;52MB;64MB;128MB.
<b>DRAM access cycle time:</b>	80ns.
<b>Cache memory:</b>	Write-Back Direct-Mapped Cache. 64K;128K;256K.(Option). Supports 2-1-1-1, 3-1-1-1, 2-2-2-2 and 3-2-2-2 cache burst cycles.
<b>Data bus widths:</b>	32Bit.
<b>I/O slots:</b>	8 Expansion slots: 8bit x 2 16bit x 6 / VESA slot x 3.
<b>Dimension:</b>	22cm x 25cm. 2/3 Baby AT size.
<b>PCB layout:</b>	4 Layers PCB.
<b>BIOS:</b>	AMI WinBIOS FLASH ROM BIOS optional.
<b>Chip set:</b>	OPTi 895/602.
<b>CPU type:</b>	PGA(With ZIF Socket) or PQFP.
<b>AT clock:</b>	AT-bus clock selectable from CPU CLK(/6,/5,/4,/3).
<b>Other features:</b>	Shadow RAM support for System BIOS. Turbo/slow speed selection. CAS# before RAS# refresh reduces power consumption. Hidden refresh support to enhance system performance. Supports full SMI Interface.



## **SETTING UP YOUR 486-GL**

### ***Intorduction***

The 486-GL mainboard has a number of jumper switches which allow you to tailor the board to your particular hardware setup. For ease of access, the settings of these jumper switchs should be made before the 486-GL has been installed in your case.

### ***How to Set Jumper switch***

A jumper switch consists of two or more pins and a plastic slider, called a jumper, Witch fits over these pins. Witch a two pin jumper, when the jumper is in position over the two pins, the switch is ON ( this shorts the two pins together); when the jumper is removed from the two pins, the switch is OFF. If you wish to set a two pin jumper as OFF, and remove the jumper, you should push the jumper ONE pin in order to avoid losing it. A two pin jumper is only ON when the jumper is over both pins. With a three pin jumper, two setting are possible. When the jumper is over pins 1 and 2 one setting is achieved; and when the jumper is over pins 2 and 3 another setting is achieved.

### ***Pin "1"***

A small figure "1" can be seen next to one pin of some of the jumper switches and connectors on your 486-GL. This indicates pin 1 of the jumper switch or connector. The other pins are not usually numbered but follow in sequential order. Where there might be confusion as to the numbering, all pins are numbered.

When connecting the jumpers attached to your case components to the jumper connectors, particular attention must be paid to the orientation of the jumper with regardspin 1. Unfortunately there is no color standard for the leads attached to case components so we cannot specify which color lead should be attached to pin 1. In general, however, the lead to be connected to pin 1 is often colored red, or is of a different color from the other leads attached to the jumper.

### ***486-GL Jumper Switch Setting***

The illustration on the next pages shows the position of the jumper switchs and jumper connectors on your 486-GL mainboard. Compare this illustration with your mainboard to locate the position of the jumper switchs.

## JUMPER SETTING:

### J1: External Battery

**J2: Keylock/Power LED:** 1-3 Power LED Connector  
4-5 Keylock Connector

### S1: Rest

**JP1: PQFP CPU select:** Close PQFP CPU Disable  
Open PQFP CPU Enable

**JP2: 5Volts/3.3Volts CPU select:** 1-2, 4-5 5Volts CPU  
2-3, 5-6 3.3Volts CPU

**JP6,JP7: SX/DX CPU select:** Close "DX" CPU  
Open "SX" CPU

**JP16: Turbo Switch:** Close Turbo  
Open Non-Turbo

### JP17: Turbo LED

### JP18: Speaker

### JP21: Hardware Wake Up Switch

**JP26: Discharge Battery:** 2-3 Battery Enable  
1-2 Discharge

**JP30: Monitor Type:** Close Color  
Open Mono

### JP32: Monitor Power -Saving Control

**JP45: Intel SMI CPU select:** Close Intel SMI CPU  
Open Other CPU

### JP3,JP5,JP8,JP9,JP12,JP22,JP23,JP50: CPU Type select:

CPU Type	JP3	JP5	JP8	JP9	JP12	JP22	JP23	JP50
486SX	Open	Open	2 - 3	Open	Open	1 - 2	Open	Open
487SX	2 - 3	2 - 3	1 - 2	Open	Open	1 - 2	Open	Open
486DX/DX2/DX4	1 - 2	2 - 3	1 - 2	Open	Open	1 - 2	Open	Open
P24T	1 - 2	2 - 3	1 - 2	2 - 3	Open	2 - 3	Open	Open
P24D				Open	Close		Close	1 - 2
CX486S M6	Open	Open	2 - 3	1 - 2	Open	1 - 2	Open	2 - 3
CX486DX M7	1 - 2	2 - 3	1 - 2	1 - 2	Open	1 - 2	Open	2 - 3

### JP43,JP27: SMI CPU select:

CPU Type	JP43	JP27
Intel SLe CPU	Open	Open
AMD SMI CPU	Open	Open
DX4 P24C 3X	Open	Open
DX4 P24C 2X	1 - 2	Open
CX486DX M7 1X	Open	1 - 2
CX486DX M7 2X	Open	2 - 3
Other CPU	Open	Open

**JP48,JP40,JP39,JP38: CPU CLK select:**

Clock	JP48	JP40	JP39	JP38
20MHz	1 - 2	Open	Close	Open
25MHz	1 - 2	Open	Close	Close
33MHz	1 - 2	Close	Open	Close
33MHz (DX4 CPU)	2 - 3	Open	Open	Close
40MHz	1 - 2	Close	Close	Open
50MHz	1 - 2	Close	Close	Close
50MHz (DX4 CPU)	2 - 3	Open	Close	Close

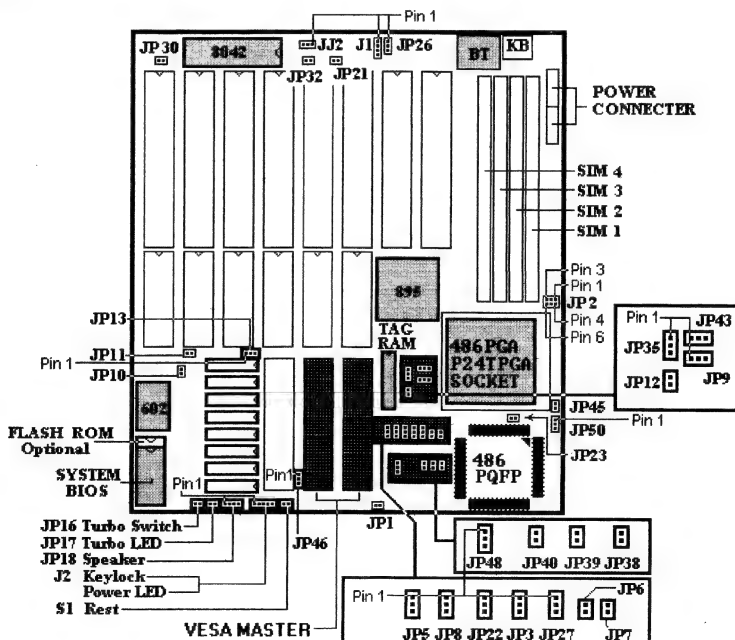
**JP46: VL-Bus CLK speed select:**

<b>LCLK</b>	<b>JP46</b>
<b>&gt; 33MHz</b>	1 - 2
<b>≤33MHz</b>	2 - 3

**JP10,JP11,JP13,JP35: Cache RAM Size select:**

Cache Size	JP10	JP11	JP13	JP35	U13	U5 - U8	U9 - U12
<b>64KB</b>	Open	Open	2 - 3	1 - 2	8KB*8	8KB*8	8KB*8
<b>128KB</b>	Open	Close	1 - 2	1 - 2	8KB*8	32KB*8	32KB*8
<b>256KB</b>	Close	Close	2 - 3	1 - 2 2 - 3	32KB*8 16KB*8	32KB*8	32KB*8

**JUMPER SWITCHES LOCATION:**



### ***J1: External Battery***

Your 486-GL comes with a battery build-in. This battery powers the real-time clock and ensures that the SETUP data stored in the CMOS RAM are not lost when your computer is turned off. The on-board battery is quite sufficient for normal use, but you may wish to install an external battery which may provide longer usage. If you wish to connect an external battery, you should connect it to J1 as illustrated above, and this battery will then provide the backup power for your 486-GL. Note that one of the leads attached to the battery will be colored (usually red), and this lead must be attached to the pin marked "1".

### ***J2: Keylock / Power LED***

If the case into which you wish to install your 486-GL has a keylock and power-on LED, there will be a five-lead jumper connected to the panel in which the keylock and power-on LED are situated. You should plug this jumper directly onto J2. Take care that the jumper is correctly oriented with pin 1 of J2.

### ***S1: Reset***

Most cases are fitted with a reset button to allow you to reboot your machine in case it should "hang" during operation due to a faulty hardware or software configuration. Attach the jumper from the reset button to S1.

### ***JP1: PQFP CPU select***

Set these jumper as OFF (open) only if a 486 PQFP is installed. Set the jumper as ON (close) for all other type CPU.

### ***JP16: Turbo Switch***

Connect the jumper connected to the turbo switch on your system case directly to this jumper connector.

### ***JP17: Turbo LED***

If the case into which you wish to install your 486-GL has a turbo LED to indicate when the computer is running in the turbo mode, connect the jumper attached to this component to JP17. The Turbo LED will illuminate when you enter the turbo mode, and remain illuminated until you switch back to normal mode.

### ***JP18: Speaker***

Most cases have a small speaker build-in. Attach the jumper connected to the speaker over the pins on JP18, ensuring that the colored wire (often red) is over Pin 1. Though the speaker jumper is a four pin jumper, there are usually only two leads attached to the jumper.

### ***JP26 : Discharge Battery (Discharge CMOS RAM)***

Installed on your 486-GL is a battery which ensures that the real-time clock keeps time and that SETUP information stored in the CMOS non-volatile RAM is not lost when you turn your computer off. The normal setting for JP26 will be with the jumper over pins 1 and 2, which enable the on board battery. This is the default setting. It is possible to make an incorrect setting in the SETUP program stored in the CMOS, which will cause your computer to "hang" as soon as you turn on your computer. If this occurs you may find it impossible to run the SETUP program to correct the faulty setting. This is when you may need to set the jumper of JP26 over pins 1 and 2, which will discharge the battery, thus causing the information stored in the CMOS RAM, including the incorrect setting, to be erased. You should place the jumper over pins 1 and 2 for about ten seconds to discharge the battery and then replace it over pins 2 and 3 before rebooting your system.

### ***JP30: Monitor Type Select***

Jumper JP30 should be set as OFF (open) for a monochrome monitor and ON (close) for a color or vga monitor.

### ***JP48,JP40,JP39,JP38: CPU Clock Speed Select***

These Jumpers are setting up for your CPU clock speed.

### ***JP3,JP5,JP8,JP9,JP12,JP22,JP23,JP50: CPU Type Select***

The setting of these jumper switches depends on whether a 486DX or 486SX CPU is installed.

### ***JP10,JP11,JP13,JP35: Cache Size Select***

The settings of these four jumper switches must be made according to the cache size installed. The table below details the correct setting.

## CPU JUMPER SETTING CHICKING LIST:

CPU TYPE		Volt	JP3	JP5	JP8	JP9	JP12	JP22	JP23	JP27
Intel 486SX-25	PQFP	5	Open	Open	2-3	Open	Open	1-2	Open	Open
Intel 486SX-33	PQFP	5	Open	Open	2-3	Open	Open	1-2	Open	Open
Intel 486SX-28	PGA	5	Open	Open	2-3	Open	Open	1-2	Open	Open
Intel 486SX-33	PGA	5	Open	Open	2-3	Open	Open	1-2	Open	Open
Intel 486DX-25	PGA	5	1-2	2-3	1-2	Open	Open	1-2	Open	Open
Intel 486DX-33	PGA	5	1-2	2-3	1-2	Open	Open	1-2	Open	Open
Intel 486DX-40	PGA	5	1-2	2-3	1-2	Open	Open	1-2	Open	Open
Intel 486DX-50	PGA	5	1-2	2-3	1-2	Open	Open	1-2	Open	Open
Intel 486DX2-50	PGA	5	1-2	2-3	1-2	Open	Open	1-2	Open	Open
Intel 486DX2-86	PGA	5	1-2	2-3	1-2	Open	Open	1-2	Open	Open
Intel 486SX-25 SLe	PGA	5	Open	Open	2-3	Open	Open	1-2	Open	Open
Intel 486SX-33 SLe	PGA	5	Open	Open	2-3	Open	Open	1-2	Open	Open
Intel 486DX-25 SLe	PGA	5	1-2	2-3	1-2	Open	Open	1-2	Open	Open
Intel 486DX-33 SLe	PGA	5	1-2	2-3	1-2	Open	Open	1-2	Open	Open
Intel 486DX-40 SLe	PGA	5	1-2	2-3	1-2	Open	Open	1-2	Open	Open
Intel 486DX-50 SLe	PGA	5	1-2	2-3	1-2	Open	Open	1-2	Open	Open
Intel 486DX2-50 SLe	PGA	5	1-2	2-3	1-2	Open	Open	1-2	Open	Open
Intel 486DX2-86 SLe	PGA	5	1-2	2-3	1-2	Open	Open	1-2	Open	Open
Intel DX2-66 P24D	PGA	5				Open	Close		Close	Open
Intel P24T OverDrive	PGA	5	1-2	2-3	1-2	2-3	Open	2-3	Open	Open
Intel DX4-75 P24C 3X	PGA	3.3	1-2	2-3	1-2	Open	Open	1-2	Open	Open
2X	PGA	3.3	1-2	2-3	1-2	Open	Open	1-2	Open	Open
Intel DX4-100 P24C 3X	PGA	3.3	1-2	2-3	1-2	Open	Open	1-2	Open	Open
2X	PGA	3.3	1-2	2-3	1-2	Open	Open	1-2	Open	Open
AMD 486DX-33	PGA	5	1-2	2-3	1-2	Open	Open	1-2	Open	Open
AMD 486DX-40	PGA	5	1-2	2-3	1-2	Open	Open	1-2	Open	Open
AMD 486DX2-50	PGA	5	1-2	2-3	1-2	Open	Open	1-2	Open	Open
AMD 486DX2-80	PGA	5	1-2	2-3	1-2	Open	Open	1-2	Open	Open
AMD 486DXLV-33 SMI	PGA	3.3	1-2	2-3	1-2	Open	Open	1-2	Open	Open
Cyrix 486S-33 M6	PGA	5	Open	Open	2-3	1-2	Open	1-2	Open	Open
Cyrix 486S2-66 M6	PGA	5	Open	Open	2-3	1-2	Open	1-2	Open	Open
Cyrix 486DX-40 M7	PGA	5	1-2	2-3	1-2	1-2	Open	1-2	Open	1-2
Cyrix 486DX-50 M7	PGA	5	1-2	2-3	1-2	1-2	Open	1-2	Open	1-2
Cyrix 486DX2-66 M7	PGA	5	1-2	2-3	1-2	1-2	Open	1-2	Open	2-3

CPU TYPE		Volt	JP38	JP39	JP40	JP43	JP45	JP48	JP50	JJ2
Intel 486SX-25	PQFP	5	Close	Close	Open	Open	Open	1-2	Open	1-2
Intel 486SX-33	PQFP	5	Close	Open	Close	Open	Open	1-2	Open	1-2
Intel 486SX-25	PGA	5	Close	Close	Open	Open	Open	1-2	Open	1-2
Intel 486SX-33	PGA	5	Close	Open	Close	Open	Open	1-2	Open	1-2
Intel 486DX-25	PGA	5	Close	Open	Open	Open	Open	1-2	Open	1-2
Intel 486DX-33	PGA	5	Close	Open	Close	Open	Open	1-2	Open	1-2
Intel 486DX-40	PGA	5	Open	Close	Close	Open	Open	1-2	Open	1-2
Intel 486DX-50	PGA	5	Close	Close	Close	Open	Open	1-2	Open	1-2
Intel 486DX2-50	PGA	5	Close	Close	Open	Open	Open	1-2	Open	1-2
Intel 486DX2-86	PGA	5	Close	Open	Close	Open	Open	1-2	Open	1-2
Intel 486SX-25 SLe	PGA	5	Close	Close	Open	Open	Close	1-2	Open	1-2
Intel 486SX-33 SLe	PGA	5	Close	Open	Close	Open	Close	1-2	Open	1-2
Intel 486DX-25 SLe	PGA	5	Close	Close	Open	Open	Close	1-2	Open	1-2
Intel 486DX-33 SLe	PGA	5	Close	Open	Close	Open	Close	1-2	Open	1-2
Intel 486DX-40 SLe	PGA	5	Open	Close	Close	Open	Close	1-2	Open	1-2
Intel 486DX-50 SLe	PGA	5	Close	Close	Close	Open	Close	1-2	Open	1-2
Intel 486DX2-50 SLe	PGA	5	Close	Open	Close	Open	Close	1-2	Open	1-2
Intel 486DX2-86 SLe	PGA	5	Close	Open	Close	Open	Close	1-2	Open	1-2
Intel DX2-66 P24D	PGA	5	Close	Close	Close	Open	Open	1-2	1-2	1-2
Intel P24T OverDrive	PGA	5	Close	Close	Close	Open	Open	1-2	Open	1-2
Intel DX4-75 P24C 3X	PGA	3.3	Close	Close	Open	Open	Open	2-3	Open	1-2
2X	PGA	3.3	Close	Close	Open	1-2	Open	2-3	Open	1-2
Intel DX4-100 P24C 3X	PGA	3.3	Close	Close	Open	Open	Open	2-3	Open	1-2
2X	PGA	3.3	Close	Close	Open	1-2	Open	2-3	Open	2-3
AMD 486DX-33	PGA	5	Close	Open	Close	Open	Open	1-2	Open	1-2
AMD 486DX-40	PGA	5	Open	Close	Close	Open	Open	1-2	Open	1-2
AMD 486DX2-50	PGA	5	Close	Close	Open	Open	Open	1-2	Open	1-2
AMD 486DX2-80	PGA	5	Close	Close	Close	Open	Open	1-2	Open	1-2
AMD 486DXLV-33 SMI	PGA	3.3	Close	Open	Close	Open	Open	1-2	Open	1-2
Cyrix 486S-33 M6	PGA	5	Close	Open	Close	Open	Open	1-2	2-3	1-2
Cyrix 486S2-66 M6	PGA	5	Close	Open	Close	Open	Open	1-2	2-3	1-2
Cyrix 486DX-40 M7	PGA	5	Open	Close	Close	Open	Open	1-2	2-3	1-2
Cyrix 486DX-50 M7	PGA	5	Close	Close	Close	Open	Open	1-2	2-3	1-2
Cyrix 486DX2-66 M7	PGA	5	Close	Open	Close	Open	Open	1-2	2-3	1-2

## MEMORY CONFIGURATIONS:

The table below shows some possible combinations of SIMM's supported by the 486-GL .  
The memory configuration shown in the table below.

<i>Total Memory</i>	<i>SIM4</i>	<i>SIM3</i>	<i>SIM2</i>	<i>SIM 1</i>
2M	0	0	1M	1M
2M	0	0	2M	0
4M	1M	1M	1M	1M
4M	2M	0	2M	0
4M	0	0	0	4M
5M	0	0	4M	1M
6M	0	4M	1M	1M
6M	0	4M	2M	0
8M	0	0	4M	4M
8M	0	0	8M	0
10M	4M	4M	1M	1M
10M	4M	4M	2M	0
10M	8M	0	1M	1M
10M	8M	0	2M	0
12M	4M	4M	0	4M
12M	8M	0	0	4M
16M	4M	4M	4M	4M
16M	8M	0	8M	0
16M	0	0	0	16M
17M	0	0	16M	1M
20M	0	0	16M	4M
32M	0	0	16M	16M
32M	0	0	32M	0
40M	0	8M	16M	16M
48M	0	16M	16M	16M
52M	4M	16M	16M	16M
64M	16M	16M	16M	16M
64M	32M	0	32M	0
64M	0	0	0	64M
128M	0	0	64M	64M
128M	0	0	128M	0

## CACHE MEMORY CONFIGURATIONS:

The cache memory is configured as two banks; Bank 0 and Bank 1. There is also one or two TGA RAM chips, which is an integral part of the cache sub-system. Please refer to the illustration of the board layout on jumper switch location, locate the two banks of data cache SRAM and the TAG RAM chip. The table below illustrates the chip configurations for each cache size.

<i>Cache Size</i>	<i>Bank 0</i>	<i>Bank 1</i>	<i>TAG RAM</i>
<b>64K</b>	8Kx8	8Kx8	8Kx8 1pcs
<b>128K</b>	32Kx8		8Kx8 1pcs
<b>256K</b>	32Kx8	32Kx8	32Kx8 1pcs or 16Kx8 1 pcs

## THE AWARD BIOS SETUP PROGRAM

### Introduction

The AWARD BIOS included on your 486 main board contains a SETUP program to allow you to configure the main board according to the monitor and disk drives you are using, and to make settings in the chipset. The SETUP program can only be accessed when the main board has been installed in your system and all necessary power, drive and display connection have been made.

### Control Keys

Keystroke	Function
→, ←, ↑, ↓	Move to the next field to the right, left, above, or below.
Esc	Main Menu -- Quit and not save change into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exiting current page and return to Main Menu.
PgUp	Increase the numeric value or make changes.
PgDn	Decrease the numeric value or make changes.
+	Increase the numeric value or make changes.
-	Decrease the numeric value or make changes.
F1	General help, only for status Pages Setup Menu and Option Page Setup Menu.
F2	General color from total 16 colors. F2 to select color forward, (shift)F2 to select color backward.
F3	Calendar, only for Status Page Setup Menu.
F4	Reserved.
F5	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu.
F7	Load the default.
F8	Reserved.
F9	Reserved.
F10	Save all the CMOS changes, only for Main Menu.

### Accessing the Standard SETUP Program

When you turn on your computer, the system will run a memory check, and you can see it counting through the memory on your screen. The following display will also appear on your screen:

**Press DEL to enter SETUP**



As long as this message is present on the screen you may press the <Del> key to access the setup program. If this message disappears before you have pressed the <Del> key, reboot your machine to call the message back to the screen. When you press <Del>, the main menu of the AWARD SETUP program will appear, as shown on the following page.

ROM PCI/ISA BIOS (2A5UId31)  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	PASSWORD SETTING
BIOS FEATURES SETUP	IDE HDD AUTO DETECTION
CHIPSET FEATURES SETUP	HDD LOW LEVEL FORMAT
POWER MANAGEMENT SETUP	SAVE & EXIT SETUP
LOAD BIOS DEFAULTS	EXIT WITHOUT SAVING
LOAD SETUP DEFAULTS	
Esc : Quit	↑↓→← : Select Item
F10 : Save & Exit Setup	(Shift)F2 : Change Color
Time, Date, Hard Disk Type . . .	

You may use the cursor up/down keys to highlight the individual menu item and press <Enter> to accept or enter the sub-menu.

### Standard CMOS setup

This setup page includes all the items in a standard compatible BIOS.

### BIOS features setup

This setup page includes all the items of Award special enhanced features.

### Chipset features setup

This page includes all the item of chipset special features.

### Load BIOS defaults

BIOS defaults indicates the most appropriate value of the system parameter which the system would be in minimum performance.

**Load setup defaults**

Chipset defaults indicates the values required by the system for the maximum performance.

**Password setting**

Change, set, or disable password. It allows you to limit access to the system and Setup, or just to Setup.

**HDD low level format**

Hard disk low level format utility.

**Save & exit setup**

Save CMOS value changes to CMOS and exit setup.

**Exit without save**

Abandon all CMOS values changes and exit setup.

***The Standard CMOS Setup***

The first item in the main menu is the **STANDARD CMOS SETUP**. You must run this part of the setup program in order to correctly setup your hardware configuration. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

ROM PCI/ISA BIOS (2A5UId31)  
STANDARD CMOS SETUP  
AWARD SOFTWARE, INC.

Date (mm/dd/yy): Mon, Aug, 22 1994							
Time (hh/mm/ss): 11 : 28 : 41							
			CYLS.	HEADS	PRECOMP	LANDZONE	SECTORS
Drive C :	None	( 0Mb)	0	0	0	0	0
Drive C :	None	( 0Mb)	0	0	0	0	0
Drive A :	1.2 M, 5.25 in.						
Drive B :	1.44M, 3.5 in.						
Video :	EGA / VGA						
Hard On :	All Errors						
				Base Memory : 640 K			
				Extended Memory : 15360K			
				Other Memory : 384K			
				Total Memory : 16384K			
Esc : Quit      ↑↓→← : Select Item      PU/PD/+/- : Modify							
F10 : Save & Exit Setup      (Shift)F2 : Change Color							

**Date**

The date format is day, date, month, year. Press <F3> to show the calendar.

**Time**

The time format is hour, minute, second. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

**Daylight saving**

The category adds one hour to the clock when daylight-saving time begins. It also subtracts one hour when standard begins.

**Drive C type****Drive D type**

The categories identify the type of hard disk drive C: or drive D: that have been installed in the computer. Press PgUp or PgDn to select a numbered hard disk type and press <Enter>. If you select Type User

, related information is asked to be entered to the following items.

*CYLS. : number of cylinders.*

*HEADS : number of heads.*

*PRECOMP : write precomp.*

*LANDZONE : landing zone.*

*SECTORS : number of sectors.*

**Drive A type****Drive B type**

The category identifies the type of floppy disk drive A: or B: that have been installed in the computer.

**Vedio**

The category select the type of adapter used for the primary system monitor that must match your video display card and monitor.

**Error halt**

The category determines whether the computer will stop if an error is detected during power up.

**Memory**

the base memory size and the extended memory size are displayed. This is automatically read from your system, and you do not need to set these parameters.

## The BIOS Features Setup

To access the BIOS Features Setup Program, highlight BIOS FEATURES SETUP in the main menu and press <Enter>. A warning message will appear on your screen and you may press any key to remove this and access the BIOS Features Setup program, as illustrated below.

ROM PCI/ISA BIOS (2A5UID31)  
BIOS FEATURES SETUP  
AWARD SOFTWARE, INC.

External Cache	: Enabled	
Quick Power On Self Test	: Disabled	
Boot Sequence	: C,A	
Boot Up Floppy Seek	: Enabled	
Boot Up NumLock Status	: On	
Gate A20 option	: Fast	
Security option	: Setup	
Video BIOS Shadow	: Enabled	
C8000-CBFFF Shadow	: Disabled	
CC000-CFFFF Shadow	: Disabled	
D0000-D3FFF Shadow	: Disabled	
D4000-D7FFF Shadow	: Disabled	
D8000-DBFFF Shadow	: Disabled	
DC000-DFFFF Shadow	: Disabled	
E0000-E3FFF Shadow	: Disabled	
E4000-E7FFF Shadow	: Disabled	
E8000-EBFFF Shadow	: Disabled	
E0000-DFFFF Shadow	: Disabled	
		Esc : Quit F1 : Help F5 : Old Values F6 : load BIOS Defaults F7 : Load Setup Defaults
		↑↓→← : Select Item PU/PD/+/- : Modify (Shift)F2 : Color

### External Cache

These two categories speed up memory access.

### Quick Power On Self Test

This category speeds up Power On Self Test(POST) after you power on the computer. If it is set to enable, BIOS will shorten or skip some check item during POST.

### Boot Sequence

This category determines which drive computer searches first for the disk operating system(i.e.,DOS). Default value is A,C.

### Boot Up Floppy Seek

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 760K, 1.2M and 1.44M are all 80 tracks.

### Boot Up NumLock Status

The default value is On.  
*On* : Keypad is number keys.  
*Off* : Keypad is arrow keys.

**Gate A20 Option***Normal : keyboard.**Fast : chipset.***Security Option**

This category allows you to limit access to the system and Setup, or just to Setup.

**System:** *This system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.*

**Setup :** *The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.*

**Note:** To disabled security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.

**Video BIOS Shadow**

It determines whether video BIOS will be copied to RAM, Video Shadow will increase the video speed.

**Enable:** *Video shadow is enabled.*

**Disabled:** *Video shadow is disabled.*

**C8000-CFFFF Shadow/****D0000-DEFFFF Shadow****E0000-EFFFF Shadow**

These categories determine whether optional ROM will be copied to RAM by 16Kbyte.

The BIOS FEATURES SETUP allows you fine tune certain features supported by the chipset and AWARD BIOS. It also includes support for shadow RAM under which the contents of the ROM BIOS can be copied into memory at boot up, enhancing performance. When you first access the BIOS FEATURES SETUP program the default settings will be loaded. If you change any of the settings you may recall the default setting at any time from the main menu.

**The CHIPSET Features Setup**

ROM PCI/ISA BIOS (2A5UId31)

CHIPSET FEATURES SETUP

AWARD SOFTWARE, INC.

Auto Configuration	: Enabled		
AT Clock Option	: Sync		
Synchronous AT Clock	: CLK/6		
DRAM Read Wait State	: 5-4-4-4		
DRAM Write Wait State	: 1 WS		
Cache Read Burst Mode	: 3-2-2-2		
Cache Write Burst Mode	: 1 WS		
Hidden Refresh	: Enabled		
System BIOS Cacheable	: Disabled		
Video BIOS Cacheable	: Disabled		
		Esc : Quit	↑↓→← : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift)F2 : Color
		F6 : load BIOS Defaults	
		F7 : Load Setup Defaults	

## The Power Management Setup

ROM PCI/ISA BIOS (2A5UId31)  
CHIPSET FEATURES SETUP  
AWARD SOFTWARE, INC.

PM Mode : SMI Green	LDEV Detection : Disable
Power Management : Disable	LREQ Detection : Disable
DOZE timer : Disabled	Video Detection : Disable
Sleep timer : Disabled	HDD Detection : Disable
HDD Standby Timer : Disabled	FDD Detection : Disable
Sleep Clock : Stop Clock	DRQ0 Detection : Disable
CRT Sleep : Disabled	DRQ1 Detection : Disable
PM wait for APM : H/V SYNC+BLANK	DRQ2 Detection : Disable
IRQ3 Detection : Enable	DRQ3 Detection : Disable
IRQ4 Detection : Enable	DRQ5 Detection : Disable
IRQ5 Detection : Enable	DRQ6 Detection : Disable
IRQ6 Detection : Enable	DRQ7 Detection : Disable
IRQ7 Detection : Enable	
IRQ8 Detection : Disable	
IRQ9 Detection : Enable	
IRQ10 Detection : Enable	
IRQ11 Detection : Enable	Esc : Quit
IRQ12 Detection : Enable	F1 : Help
IRQ14 Detection : Disable	F5 : Old Values
IRQ15 Detection : Disable	F6 : Load BIOS Defaults
	F7 : Load Setup Defaults
	↑↓→← : Select Item
	PU/PD/+/- : Modify
	(Shift)F2 : Color

### PM Mode

**SMI Green:** Pre-defined only for the Intel S-Serial CPU, That all of Power-Management interrupt is using SMI.

**Auto Green:** Pre-defined only for the other CPU (AMD, Cyrix...)

### Power Management

This category determines how power consumption for system after selection below items. Default value is Disable.

**User Defined:** All the power down time-out values are selected by user.

**Max power Saving:** Auto setting power down time-out value to maximum power consumption.

**Min power Saving:** Auto setting power down time-out value to save minimum.

**Disable:** Disable whole system power management function.

### Doze timer

Defines the continuous idle time before the system entering DOZE mode.

**Options:** 15Sec/2Min/5Min/15Min/30Min/45Min/60Min/240Min.

**Disabled:** System will never enter DOZE mode.

**Note:** This mode is only for Intel S-Serial, the CPU Clock will down to 8MHz in DOZE mode.

**Sleep timer**

Defines the continuous idle time before the system enters Sleep mode.

*Options:* 15Sec/2Min/5Min/15Min/30Min/45Min/60Min/240Min.

*Disabled:* System will never enter Sleep mode.

**HDD Standby Timer**

Select time-out value 1 - 15 minutes for IDE with disk auto standby. This function depends on disk drive, some older mode disk drive don't support auto standby function. System BIOS set this function before booting if HDD supported.

*Disabled:* HDD's motor will not off.

**Sleep Clock**

This item is only for Intel S-Serial, the BIOS will automatically detect CPU and disable this item if the CPU is not Intel S-Serial.

*Stop:* To define the CPU stop in sleep mode.

*Slow:* To define the CPU slowdown (8MHz) in sleep mode.

**CRT Sleep**

*Disabled:* To define the CRT will not turn off during SLEEP mode.

*Enable:* To define the CRT will turn off during SLEEP mode.

**IRQ3-15**

IRQ3-IRQ15 Monitor: These bits, if enabled, will allow the IRQ input to be monitored for both inactivity for entering the GREEN Mode and activity for entering the NORMAL Mode.

**LDEV / LDEQ Detection**

These two bits, if enabled, will allow local bus devices to be monitored for entering the GREEN Mode.

**Video Detection**

This bit, if enabled, will allow video port devices to be monitored for entering the GREEN Mode.

**HDD Detection**

This bit, if enabled, will allow hard disk port devices to be monitored for entering the GREEN Mode.

**FDD Detection**

This bit, if enabled, will allow floppy disk port devices to be monitored for entering the GREEN Mode.

**DRQ0-7 Detection**

IRQ3-IRQ15 Monitor: These bits, if enabled, will allow the DRQ input to be monitored for both inactivity for entering the GREEN Mode.

***The Load BIOS / Setup Defaults Setting***

The BIOS/Setup Defaults setting are best-case Values that should optimize system performance.

## ***The Password Setting***

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

### **ENTER PASSWORD:**

Type the password, up to eight characters, and press <Enter>. The password typed now will clear any previously enter password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable password , just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled. Once the password is disabled, the system will boot and you can enter setup freely.

### **PASSWORD DISABLED.**

If you select System at Security Option of BIOS Features Setup Menu, you will be prompted for the password every time the systems reboot or any time you try to enter setup. If you select Setup at Security Option of BIOS Features Setup Menu, you will be prompted only when you try to enter setup.

## ***IDE HDD AUTO DETECTION***

The hard disk drive parameters for Drive C: and Drive D: are automatically detected and reported to the Drive C: and Drive D: screen in this setup utility.

## ***HDD LOW LEVEL FORMAT***

This AWARD Low-Level-Format Utility is designed as a tool to save your time formatting your hard disk. The Utility automatically looks for the necessary information of the drive you selected. The Utility also searches for bad tracks and lists them for your reference.





**1.CPU TEST:**

ITEM.	BIOS TEST	MEMORY TEST	HARDWARE TEST	SOFTWARE TEST	M/B FUNCTION	DYNAMICS TEST
486SX-20	OK	OK	OK	OK	OK	OK
486SX-25	OK	OK	OK	OK	OK	OK
486SX-33	OK	OK	OK	OK	OK	OK
486DX-33	OK	OK	OK	OK	OK	OK
486DX-40	OK	OK	OK	OK	OK	OK
486DX-50	OK	OK	OK	OK	OK	OK
486DX2-50	OK	OK	OK	OK	OK	OK
486DX2-66	OK	OK	OK	OK	OK	OK
DX4-75	OK	OK	OK	OK	OK	OK
DX4-100	OK	OK	OK	OK	OK	OK
CX486S(M6)	OK	OK	OK	OK	OK	OK
CX486DX-40(M7)	OK	OK	OK	OK	OK	OK

**2.BIOS TEST:**

BIOS Version:	AMI WinBIOS 12 / 15 / 93'
Pwer on default (F7):	OK
BIOS default (F6):	OK
Factory default:	OK
AUTO Config funtion:	OK
BIOS option function:1.Shadow RAM	OK
2.Password	OK
3.Auto detect HDD type	OK

**3. CACHE TEST:**

CACHE RAM	64K	128K	256K
SRAM BRAND	8K*8-20 1. *_WINBOND 2. *_UMC 3. *_MICRON 4. *_ISSI 5. *_MOTOROLA 6. *_TOSHIBA	32K*8-20 1. *_WINBOND 2. *_UMC 3. *_MICRON 4. *_ISSI 5. *_IDT 6. *_PARADIGM 7. *_MHS 8. *_MOSEL	32K*8-20 1. *_WINBOND 2. *_UMC 3. *_MICRON 4. *_ISSI 5. *_IDT 6. *_PARADIGM 7. *_MHS 8. *_MOSEL
TAG RAM BRAND	8K*8-20 1. *_WINBOND 2. *_UMC 3. *_MICRON 4. *_ISSI 5. *_MOTOROLA 6. *_TOSHIBA 7. *_ALLIANCE	8K*8-20 1. *_WINBOND 2. *_UMC 3. *_MICRON 4. *_ISSI 5. *_MOTOROLA 6. *_TOSHIBA 7. *_ALLIANCE	32K*8-20 1. *_WINBOND 2. *_UMC 3. *_MICRON 4. *_ISSI 5. *_IDT 6. *_PARADIGM 7. *_MHS 8. *_MOSEL 9. *_TOSHIBA

#### 4. MEMORY TEST:

ITEM.	1M (80ns)	2M (80ns)	4MB (80ns)	8MB (80ns)
DRAM BRADN:	1. Hitachi	3. Samsung	5. Samsung	10. Panasonic
	2. Panasonic	4. HYU	6. NEC	7. OKI
			8. Panasonic	
			9. Hitachi	

DRAM/CACHE RAM	64KB	128KB	256KB
1MB * 2 pcs	OK	OK	OK
1MB * 4 pcs	OK	OK	OK
4MB * 1 pcs	OK	OK	OK
4MB * 4pcs	OK	OK	OK
8MB * 1 pcs	OK	OK	OK
8MB * 4pcs	OK	OK	OK

#### 5. HARDWARE TEST:

FDD test:	1. 1.2MB 2. 360KB 3. 720KB 4. 1.44MB
HDD test:	1. ST157A 2. ST351A 3. ST225 4. CONNER 40MB 5. CONNER 80MB 6. CONNER 120MB 7. MAXTOR 120MB 8. MAXTOR 200MB 9. QUANTUM 240MB 10. SCSI 200MB
I/O card test:	1. Sipper I/O card (WD37C65) 2. Sipper I/O card (WINBOND) 3. Sipper I/O card (GT) 4. Sipper I/O card (Gold Star) 5. CACHE IDE (VESA DC-680) 6. IDE (VESA Appian) 7. IDE(VESA PROMISE) 8. IDE (VESA TTL Version) 9. SCSI (ISA Adptec) 10. SCSI (VESA Ultrastor)
Display card test:	1. ET-3000 2. ET-4000 (ISA) 3. ET-4000 (VESA) 4. Cirrus 5422 5. WDC 6. Cirrus 5426 (VESA) 7. MGP 8. TRIDENT 9000 9. OAK 087 (VESA) 10. S3 (VESA) 11. SAIMOND VIPPER
Power supply test:	1. DEREK 250W 2. DEREK 230W 3. ST-200W
Keyboard test:	1. 101 Keys (Chinese-English )

**6. SOFTWARE TEST:**

<b>Software Driver:</b>	<ol style="list-style-type: none"> <li>1. EMM 386.SYS</li> <li>2. Himem.SYS</li> <li>3. DOS+High</li> <li>4. QEMM.SYS</li> <li>5. Files</li> <li>6. Buffers</li> <li>7. Smartdrv.sys</li> <li>8. RAMDRV.SYS</li> <li>9. WINA20.386</li> <li>10. VGA.SYS</li> <li>11. MOUSE.SYS</li> <li>12. Double Space (DOS 6.0)</li> <li>13. Country</li> <li>14. PC-CACHE</li> <li>15. POWER.EXE</li> </ol>
<b>Software Program:</b>	<ol style="list-style-type: none"> <li>1. FDD BOOT (High/Low)</li> <li>2. HDD BOOT (High/Low)</li> <li>3. DOS 3.3</li> <li>4. DOS 4.0</li> <li>5. DOS 5.0</li> <li>6. DOS 6.2</li> <li>7. QAPLUS 4.70 (High/Low)</li> <li>8. QAPLUS 5.13 (High/Low)</li> <li>9. AMIDIAG</li> <li>10. BENCHMARK</li> <li>11. POWER METER (High/Low)</li> <li>12. CHECKIT</li> <li>13. NORTON SYSTEM INFORMATION</li> <li>14. LANDMARK SPEED V. 1.14 (High/Low)</li> <li>15. LANDMARK SPEED V. 2.0 (High/Low)</li> <li>16. MIPS (High/Low)</li> <li>17. AUTOCAD</li> <li>18. ORCAD</li> <li>19. LOTUS</li> <li>20. ET</li> <li>21. PEII.III</li> <li>22. PCTOOLS</li> <li>23. ATPERF</li> <li>24. CPUI</li> <li>25. WINDOWS</li> <li>26. OS/2</li> <li>27. UNIX</li> <li>28. NOVELL</li> </ol>

**7. MAINBOARD FUNCTION TEST:**

<b>Jumper Function Test:</b>	<ol style="list-style-type: none"> <li>1. Speaker</li> <li>2. Rest (High/Low)</li> <li>3. Turbo Switch</li> <li>4. Turbo LED</li> <li>5. Keylock &amp; Power LED</li> <li>6. Display Select Jumper</li> <li>7. Battery Discharge</li> <li>8. External Battery</li> <li>9. CPU Type Select</li> <li>10. Clock Select</li> <li>11. Hardware wake up switch</li> <li>12. Monitor Power-Saving switch</li> </ol>
<b>Others:</b>	<ol style="list-style-type: none"> <li>1. Keyboard Speed Change</li> <li>2. Coprocessor</li> <li>3. Battery Current Applied Test</li> <li>4. Labor</li> <li>5. Assembly</li> <li>6. Feature Test</li> </ol>

**8. DYNAMICS BURNING TEST:**

PROGRAM/ITEM.	Voltage 4.8V-5.2V	Temperature 30°C-85°C	Time 24Hr.	Note
WINDOWS	OK	OK	OK	
OS/2	OK	OK	OK	
UNIX	OK	OK	OK	
NOVELL	OK	OK	OK	

**9. GREEN FUNCTION TEST:**

CPU TYPE	NORMAL MODE	AUTO MODE	SMI MODE	WAKE UP
Intel 486DX2/66 SLe	OK	OK	OK	OK
Intel 486DX4/100SLe	OK	OK	OK	OK
Intel 486DX/50	OK	OK	-	OK
CX 486DX-40(M7)	OK	OK	-	OK

## 10.PERFORMANCE TEST

<b>Date:</b> 6 / 7 / 94' .	<b>ITEM.</b>	<b>Brand</b>
<b>Memory:</b>	16MB	PANASONIC
<b>Cache Memory:</b>	256K	SGS TOMSON
<b>I/O Card:</b>	VESA CACHE IDE/FDD/2S/1P CARD	DC680
<b>VGA Card:</b>	VESA VGA/1MB DRAM	DIAMOND VIPER
<b>Power Supply:</b>	230W	DEREK 230
<b>Monitor:</b>	VGA 1024x768	EMC
<b>FDD:</b>	1.2MB / 1.44MB	TEAC
<b>HDD:</b>	240MB	QUANTUM
<b>Keyboard:</b>	Chinese/English 101 Keys	SUN FLOWER

Program	MIPS.	SI	LANDMARK SPEED	LANDMARK SPEED	LANDMARK SPEED	LANDMARK SPEED
<b>CPU</b>	<b>V.1.3</b>		<b>V. 1.14</b>	<b>V. 2.0 CPU</b>	<b>V. 2.0 FPU</b>	<b>V. 2.0 Video</b>
<b>486SX-33</b>	High:14.703 Low: 3.758	High:50.70 Low: 26.80	High:150.70 Low: 21.80	High:110.99 Low: 24.67	High:9.41 Low: 3.92	High:11045.00 Low: 3654.00
<b>486DX-33</b>	High:14.703 Low: 3.758	High:50.70 Low: 26.80	High:150.70 Low: 21.80	High:110.99 Low: 24.67	High:9.41 Low: 3.92	High:11045.00 Low: 3654.00
<b>486DX-40</b>	High:17.716 Low: 4.81	High:62.00 Low: 23.00	High:182.30 Low: 61.80	High:133.80 Low: 48.52	High:327.39 Low:119.44	High:12443.00 Low: 4165.00
<b>486DX-50</b>	High:22.145 Low: 8.566	High:76.20 Low: 28.20	High:200+ Low:75.60	High:167.27 Low:59.46	High:409.26 Low: 153.87	High:21370.00 Low: 21370.00
<b>486DX2-50</b>	High:22.145 Low: 8.566	High:76.20 Low: 28.20	High:200+ Low:75.60	High:167.27 Low:59.46	High:409.26 Low: 153.87	High:21370.00 Low: 21370.00
<b>486DX2-66</b>	High:27.255 Low:9.695	High:102.50 Low:37.40	High:200+ Low:77.70	High:222.77 Low:77.81	High:544.94 Low:205.98	High:10922.00 Low:3654.00
<b>DX4-75</b>	High:30.925 Low:11.430	High:139.7 Low:51.6	High:200+ Low:86.8	High:272.43 Low:94.39	High:613.78 Low:230.70	High:2137.00 Low:2386
<b>DX4-100</b>	High:41.026 Low:15.048	High:185.8 Low:68.6	High:200+ Low:115.5	High:363.28 Low:124.08	High:817.50 Low:307.61	High:24246 Low:4748
<b>CX486S-33</b>	High:14.703 Low: 3.758	High:50.70 Low: 26.80	High:150.70 Low: 21.80	High:110.99 Low: 24.67	High:9.41 Low: 3.92	High:11045.00 Low: 3654.00